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SHEATHING**

INSULATING
LATH

ROOF INSULATION

NOISEMASTER
ACOUSTICAL
TILE

Approved For Release 1999/0



INSULATING BOARD PRODUCTS

Descriptive Information, Physical Properties, Test Data and Application Instructions

SIMPSON INSULATING BOARD is the general term used for describing a line of rigid of structural wood fiber insulating materials made in many forms without knots or grain and having a wide range of uses. These materials perform several functions because they combine heat and sound insulating properties with structural strength and (in certain types) interior finish. In their decorative forms, Simpson Insulating Board interior finish products may be left in the factory-applied finish

or used as a foundation for many kinds of surface decoration. One product (Lath) combines insulating value with high plaster bonding strength.

MANUFACTURE

Simpson Insulating Board Products are manufactured from Douglas Fir and Western Hemlock fibers which, when properly blended, processed and fabricated into

Table 1. Simpson Insulating Board Products

NAME OF PRODUCT		SIZES	THICKNESSES	EDGES	SURFACE FINISH
Simpson Insulating Building Board—Note [a]		4'x6', 4'x7' 4'x8', 4'x9' 4'x10', 4'x12'	$\frac{1}{2}$ " $\frac{3}{4}$ " and 1" on special order	Square	Tapestry White Note [b]
Simpson Insulating Decorative Tileboard		12"x12", 12"x24" 16"x16", 16"x32"	$\frac{1}{2}$ "	Beveled with nailing or stapling flange joint	Tapestry White Note [c]
Simpson Insulating Decorative Plank		Widths: 8", 10", 12", 16". Lengths: 8', 10', 12'.	$\frac{1}{2}$ "	Short edges: Square Long edges: Beveled with nailing flange joint	Tapestry White Note [c]
Noisemaster Acoustical Tile		12"x12" 12"x24" 24"x24"	$\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", 1" $\frac{3}{4}$ " 1"	Beveled with two opposite sides kerfed to hold wood spline Note [e]	Linen White
Simpson Insulating Sheathing	Type A	2'x8"	$\frac{1}{2}$ " 25/32"	Long edges: Beveled V-Joint Short edges: Square	Brown
	Type B	4'x8', 4'x8 $\frac{1}{2}$ ', 4'x9', 4'x10', 4'x12'	$\frac{1}{2}$ " 25/32"	Square edges	
Simpson Insulating Lath		18"x18", 16"x48"	$\frac{1}{2}$ "	Short edges: Square Long edges: Beveled V-Joint	Tan
Simpson Roof Insulation [plain]		24"x48"	$\frac{1}{2}$ ", 1", 1 $\frac{1}{2}$ ", 2", 2 $\frac{1}{2}$ ", 3"	Square; also available with shiplapped edges on 1", 1 $\frac{1}{2}$ " and 2" thicknesses	Tan
Simpson Asphalt-Impregnated Roof Insulation					Brown
Simpson A-I Shingle Backer		13 $\frac{1}{2}$ "x48" 15 $\frac{1}{2}$ "x48"	$\frac{3}{8}$ "	Square	Brown
Simpson Economy Wallboard		4'x6', 4'x7', 4'x8' 4'x9', 4'x10', 4'x12'	$\frac{3}{8}$ "	Square	White Note [c]
Simpson Asphalt-Impregnated Wallboard		4'x6', 4'x7', 4'x8', 4'x9' 4'x10'. 4'x12'	$\frac{3}{8}$ "	Square	Brown
Simpson Insulating Roof Slab		2'x8'	1 $\frac{1}{2}$ ", 2", 3"	T&G long edges, short edges square	Note [d]

^a Available on special order with long edges beveled.

^b Reverse side, natural color of board. This product also available in the natural color on both surfaces.

^c Reverse side, natural color of board.

^d See Table 3 for description of various types and finishes.

^e The 24"x24"x1" Noisemaster is available with tongue and groove joint only.

January 7, 1954

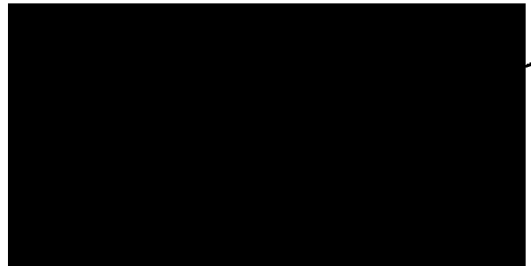
25X1A9a

[REDACTED]
Santa Rosa
California

Dear Don:

Look on page 7 for Thermal Conductivity figures and page 15 for Application data on Simpson Roof Deck. I think these booklets will give you the information you require.

25X1A9a



various forms, possess unique physical properties. The source of the fiber is the 250,000-acre Simpson sustained yield managed timber lands, located in the heart of the Olympic Mountains in the northwest corner of the State of Washington.

These products are made in an ultra-modern plant in Shelton, Washington, embodying the latest manufacturing process. In this process, the wood is carefully sorted and all bark and rot are removed before chipping. The chips are defibered, or ground, under closely controlled conditions so that the required fiber length is obtained. The defibered wood or pulp is then pumped through screens and chests, where the waterproofing and other chemicals are added, until finally it arrives at a traveling wire, where a sheet of wet pulp of definite weight and thickness is formed.

In the subsequent felting process, the fibers are formed into large homogeneous boards. The final steps are the drying and removal of the water and the cutting and trimming of the board to the finished sizes. During the manufacturing process, the fibers are specially treated by the Biotox Process to render the board resistant to termites, fungus growth, rot, mildew and decay. Simpson Insulating Building Board, Decorative Tileboard and Plank and Noisemaster Acoustical Tile are finished on one surface in an attractive white. Certain products are also additionally fabricated, such as with special joints.

PRESERVATIVE TREATMENT

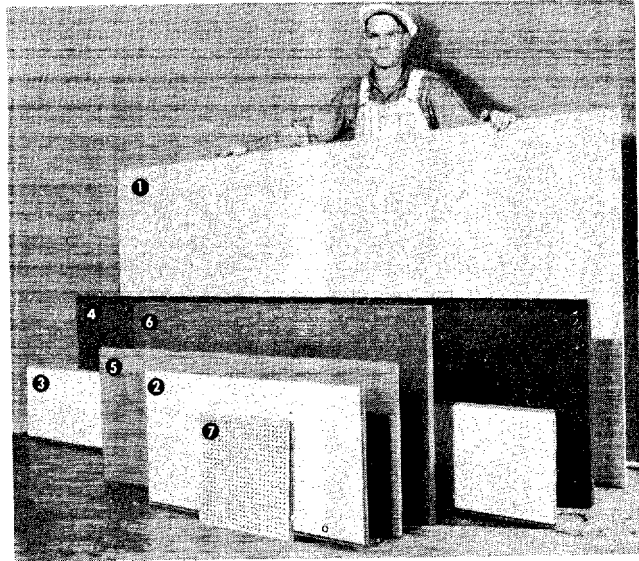
All Simpson Insulating Board products are treated by the exclusive Simpson Biotox process which destroys termites and inhibits the growth of decay and rot-producing fungi or micro-organisms. For this reason, Simpson Insulating Board products should outlast the framing to which they are applied. The Biotox process was developed as the best and most advanced preservative protection. As used, it is odorless and harmless to humans and animals.

PRODUCTS

The principal Simpson Insulating Board products are the Insulating Building Board, Insulating Decorative Tileboard, Insulating Decorative Plank, Insulating Sheathing, Insulating Lath, Noisemaster Acoustical Tile, plain and Asphalt-Impregnated Roof Insulation, A-I Shingle Backer, Economy and Asphalt-Impregnated Wallboard and the Insulating Roof Slab. The sizes, thicknesses and other data are given in Table 1.

Simpson Insulating Building Board is a general purpose structural insulating board. It is produced in four-foot widths and in lengths from 6 to 12 ft. Edges are plain and square. The standard thickness is $\frac{1}{2}$ ", although $\frac{3}{4}$ " and 1" thicknesses will be supplied on special order. One side is finished in an attractive white and the reverse side is the natural color of the board. This product is also available with both sides in the natural color of the board. An Asphalt-Impregnated Insulating Building Board is available.

Simpson Insulating Building Board provides a beautiful interior finish when applied to walls and ceilings. If desired, the boards may be stained, painted, stenciled or carved with excellent results. This product is easily cut, carved, beveled or grooved with ordinary woodworking tools with sharp cutting edges. Special tools have



Simpson Insulating Board Products and Noisemaster Acoustical Tile.

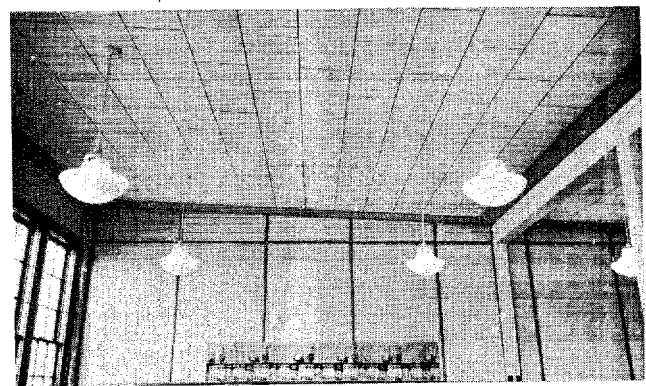
No. 1—Simpson Insulating Building Board. No. 2—Simpson Insulating Decorative Tileboard. No. 3—Simpson Insulating Decorative Plank. No. 4—Simpson A-I Insulating Sheathing. No. 5—Simpson Insulating Lath. No. 6—Simpson Roof Insulation. No. 7—Simpson Noisemaster Acoustical Tile.

been developed for beveling, grooving and cutting insulating board.

Simpson Insulating Building Board is ideal for constructing partitions of all kinds, either permanent or temporary. Placed over joists under rough flooring, it provides heat insulation and helps reduce the passage of sound.

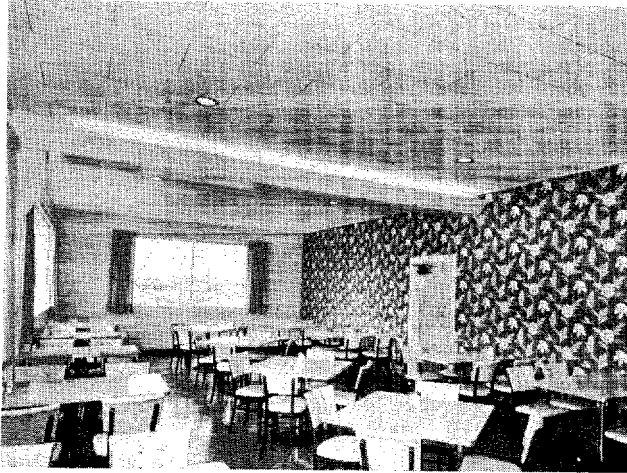
The combined structural and insulating properties of Simpson Insulating Building Board are particularly valuable where farm structures are involved. Consequently there are many farm uses for this product such as poultry and brooder houses, dairy barns, hog houses, fruit and vegetable storages and many other types of structures.

Simpson Insulating Decorative Tileboard is an insulating interior finish product used largely on ceilings, frequently in combination with wall patterns obtained with either Simpson Insulating Building Board or Simpson Insulating Decorative Plank, which are also classified as interior finish products. The Tileboard may also be used on walls.



Simpson Insulating Building Board Applied to Walls of School Building. Simpson Insulating Decorative Tileboard Used on Ceiling.

Simpson INSULATING BOARD PRODUCTS



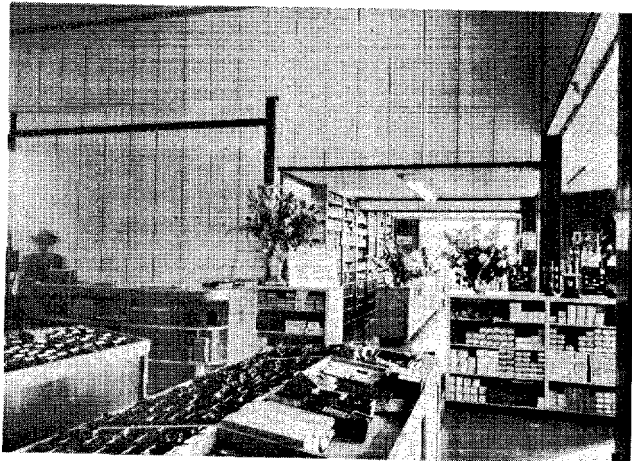
Simpson Insulating Decorative Tileboard used on ceiling of restaurant.

The exposed surface of the Tileboard is finished in a luxurious Tapestry White and the reverse side is the natural color of the board. The Tapestry White surface is particularly suitable for ceilings, not only because of the beautiful texture, but also because of the high light reflection which averages 80%.

The standard sizes of Simpson Insulating Decorative Tileboard are 12"x12", 12"x24", 16"x16" and 16"x32". The standard thickness is 1/2". The rectangular sizes of the Tileboard (12"x24" and 16"x32") are available with a bevel across the center to simulate two square tile. This feature makes it possible to increase the rate of application where certain square tile patterns are desired, thus reducing the labor cost.

A special feature of this product is the interlocking tongue and groove joint with beveled edges and with the extended flange for concealed nailing or stapling. Fig. 1 is a section through the joint with two adjoining Tileboard in place.

Simpson Insulating Decorative Plank is made in long, narrow units which are available in various widths and lengths. The surface to be exposed is finished in Tapestry White. The long edges are beveled and also have a special interlocking tongue and groove joint



Simpson Insulating Decorative Plank used on walls of lumber dealer salesroom.

similar to that of the Tileboard so that they fit smoothly together for greater rigidity when applied in place.

Simpson Insulating Decorative Plank may be applied either vertically or horizontally. Varying the width or

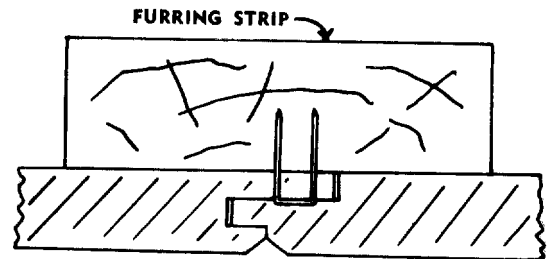


Fig. 1. Section Through Tileboard Joint Showing Application by Staple Method.

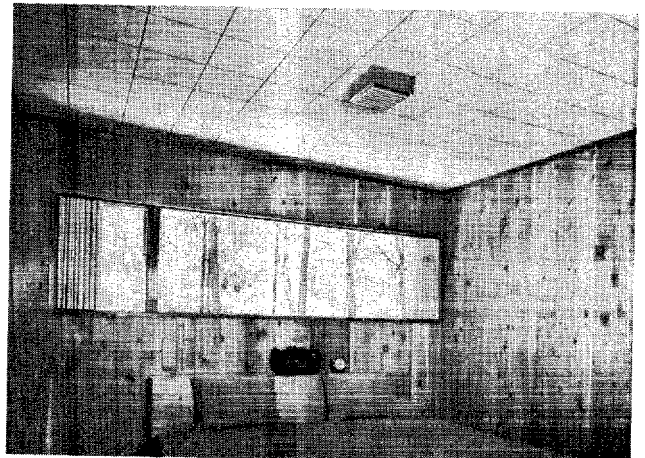
ting with various colors permits a wide range of decorative design. The Plank has the same insulating value and strength as other Simpson Insulating Board Products and therefore effectively reduces fuel consumption and increases comfort.

Simpson Noisemaster Acoustical Tile — with the exclusive SPLINE-LOK System — was developed to meet the need for an easy-to-apply, low-cost acoustical tile.

Tough wood splines fit into the grooves or kerfs on two opposite edges of each tile. When installation is on furring strips or wood backing these interlocking splines greatly simplify application, seal transverse joints, automatically level the corners, aid in holding straight lines and permit the use of fewer nails or staples per tile. When tile is installed on plaster or cement, the usual adhesive method of application may be used.

Each Noisemaster tile is Hollocore drilled, having 484 clean, round perforations per square foot with no loose fibers to encourage paint bridging when repainting. This tile has sound absorption values unexcelled by those of any other drilled fiber acoustical tile in the commonly used thicknesses and types of mountings. The attractive Linen White finish provides high light reflection without glare.

The sound absorption coefficients of Noisemaster Acoustical Tile are given in Table 2.



Simpson Noisemaster Acoustical Tile applied to ceiling of bedroom.

Table 2. Sound Absorption Coefficients of Noisemaster Acoustical Tile^a

THICKNESS	MOUNTING ^c	COEFFICIENTS ^b						NOISE RED. COEF. ^d	UNIT SIZE TESTED	LB. PER SQ. FT.
		128	256	512	1024	2048	4096			
1/2"	1	.05	.12	.55	.87	.78	.68	.60	12" x 12"	.63
1/2"	2	.04	.38	.69	.84	.75	.69	.65	12" x 12"	.63
5/8"	1	.06	.18	.74	.90	.78	.70	.65	12" x 12"	.80
5/8"	2	.14	.50	.70	.83	.78	.71	.70	12" x 12"	.80
3/4"	1	.10	.25	.79	.92	.76	.71	.70	12" x 12"	.91
3/4"	2	.19	.47	.71	.90	.75	.64	.70	12" x 12"	.91
1"	1	.13	.36	.90	.90	.78	.73	.75	12" x 12"	1.20
1"	2	.21	.59	.81	.88	.75	.62	.75	12" x 12"	1.20

^a Perforated 484 holes per sq. ft.; perforations 3/16" in diameter, 1/2" o.c.

^b Data based on tests conducted at Riverbank Laboratories, Geneva, Illinois.

^c Mountings: No. 1 cemented to plasterboard. Considered equivalent to cementing to plaster or concrete ceiling. No. 2 nailed to 1" x 3" wood furring 12" o.c.

^d The noise reduction coefficient is the average of the coefficients at frequencies of 256, 512, 1024 and 2048 cycles, given to the nearest 5%.

Simpson Asphalt-Impregnated [A-I] Insulating Sheathing has many advantages over conventional materials used for wall sheathing. It contributes greater bracing strength and rigidity to the wall structure. It provides efficient insulation in summer and winter. Simpson A-I Insulating Sheathing replaces non-insulating sheathing at little or no extra cost. It is permanent as it is integrally waterproofed with asphalt and like other Simpson Insulating Board products is treated by the Biotox process for protection against termites, rot, decay and mildew. There are no knotholes, shrinkage cracks or other imperfections. This product is light in weight and easy to handle and can be applied about twice as fast as wood sheathing. No building paper is required over Simpson A-I Insulating Sheathing as it has high resistance to wind infiltration. There is no dimensional waste because of full dimension and there is little or no cutting waste.

Strength tests conducted on Simpson A-I Insulating Sheathing at the Universities of Washington and Minnesota indicate that this sheathing provides substantially greater wall strength than lumber. According to the University of Washington tests, the bracing strength of the 2'x8', 1/2" Simpson A-I Insulating Sheathing was 2.57 times that of 1"x8" wood shiplap applied horizontally. Tests at the University of Minnesota showed that 4'x8' panels of 25/32" Simpson A-I Insulating Sheathing provided substantially greater racking strength than

horizontal wood sheathing with corner bracing. This size Simpson Insulating Sheathing complies with FHA requirements for the elimination of corner bracing.

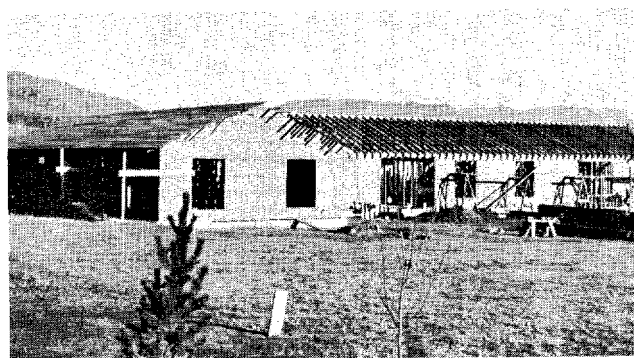
It is essential, especially in cold climates, that vapor barriers be installed on the warm side of the wall (as discussed elsewhere in this folder) and that the cold side (including the sheathing) be permeable to water vapor. Simpson A-I Insulating Sheathing readily conforms to this requirement, based on tests conducted by Prof. F. B. Rowley of the University of Minnesota.

Sizes, thicknesses and other data are given in Table 1.

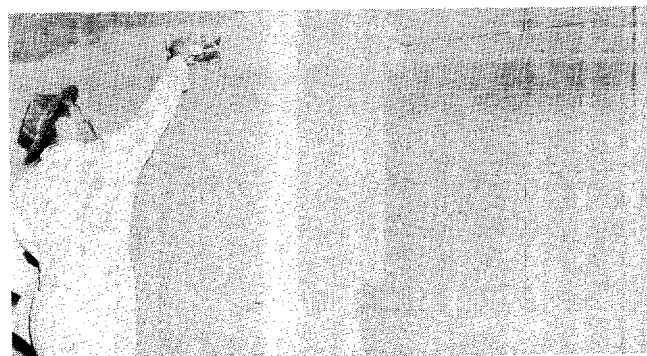
Simpson Insulating Lath is a better plaster base and an efficient insulation in one material. It provides a smooth, beautiful wall free from lath marks. The units are 16" and 18" wide by 4' long and 1/2" thick.

Simpson Insulating Lath is manufactured with interlocking beveled V-joints on the long edges (Fig. 2). Short edges, which are nailed to framing members, are square. The plaster bond between Simpson Insulating Lath and plaster averages about 800 pounds per square foot. As the plaster load of a ceiling amounts to only about five pounds per square foot, there is a factor of safety of about 160. The plaster goes on easier and there is a consequent saving in material and labor.

Simpson Insulating Lath is easily cut and fitted. It can be quickly nailed to studs, joists or furring strips and is then ready to receive the plaster. Where the exterior is solid masonry, Simpson Insulating Lath may



Simpson A-I Insulating Sheathing used on residence walls.



Plastering on Simpson Insulating Lath

Simpson INSULATING BOARD PRODUCTS

be applied to the inside surface over furring strips attached to the masonry.

The use of Simpson Insulating Lath on the inside of the studs and Simpson A-I Insulating Sheathing on the outside provides a well insulated wall of sufficient heat resistance for practically any climate or type of fuel. These two products together reduce the heat loss through the average wall approximately 40%.

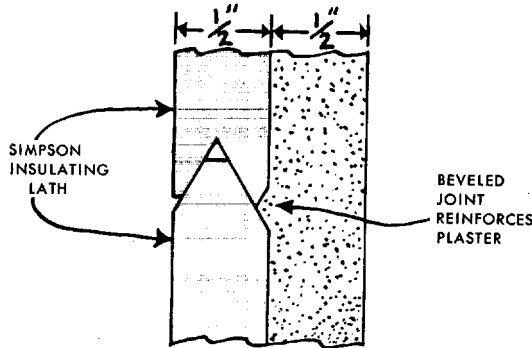


Fig. 2. Section Through Simpson Insulating Lath and Plaster Showing Beveled V-Joint.

Simpson Roof Insulation is designed especially for the insulation of roofs under built-up roofing and is widely used to insulate roofs of new and existing industrial and commercial buildings, schools, auditoriums and other structures. The material is available in the plain and asphalt-impregnated types. Both are integrally waterproofed during manufacture. The plain roof insulation is suitable for ordinary requirements. The asphalt-impregnated roof insulation has a higher degree of water resistance and is designed for use where more severe moisture conditions are encountered. Asphalt-impregnation does not impair the insulating value.

Owing to its high insulating value, Simpson Roof Insulation will usually, in a few years time, pay for itself in fuel savings, and often permits reduction in the size of the heating plant. Simpson Roof Insulation results in increased comfort and improved working conditions both winter and summer. When installed in the proper thicknesses, it will prevent ceiling condensation

or "sweating" which often causes serious damage in industrial buildings.

The standard size of both the plain and the asphalt-impregnated Simpson Roof Insulation is 24"x48", in thicknesses of 1/2" and multiples thereof up to 3". Edges are square, but the 1", 2" and 3" thicknesses may be obtained on special order with offset or shiplapped edges.

Simpson A-I Shingle Backer is used in the double coursing method of shingle application and provides a smooth and continuous base for the outer course of shingles or shakes. One of the advantages of the Shingle Backer is that it provides a heavier shadow line at the butt of the shingles, thereby improving the beauty of the wall. See Fig. 3.

This product increases the thermal resistance of the wall, thus saving fuel and increasing comfort. It provides a tight, moisture-resistant barrier under the shingles or shakes and eliminates the use of building paper over wood sheathing, thus introducing a material and labor saving on this item. (Note: No building paper is required where Simpson A-I Insulating Sheathing is used.) Another advantage of the Shingle Backer is that it reduces application time and labor cost as compared to second grade wood shingle undercoursing.

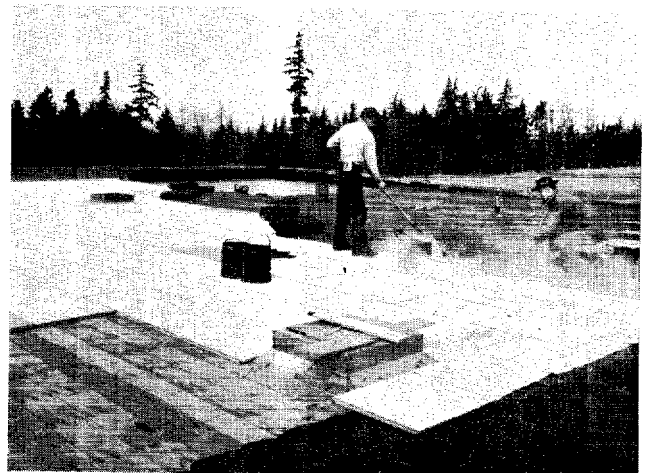
Simpson A-I Shingle Backer is available in two sizes, 13 1/2"x48" for 16" shakes and 15 1/2"x48" for 18" shakes. The maximum shake exposures are 12" and 14", respectively.

Simpson Insulating Roof Slab is a lightweight insulating roof sheathing combining three materials in one: (1) roof deck or sheathing, (2) insulation and (3) interior finish. The easy-to-handle 2-ft. x 8-ft. panels consist of multiple layers of Simpson Insulating Board products laminated together with water-resistant adhesive. A modified tongue-and-groove joint is cut into the long edges. Short edges, which rest on framing, are square. Standard thicknesses are 1 1/2-inch, 2-inch and 3-inch. The bottom (exposed) side of the material is available in either a pleasing Tapestry White finish or the natural finish. The various available types of Simpson Insulating Roof Slab are shown in Table 3.

This Roof Slab is generally applied over exposed beams with the lower surface of the Slab exposed, although it may also be used where other types of ceiling finish are to be used such as lath and plaster, Simpson



Simpson Roof Insulation being mopped to concrete roof deck.



Simpson Roof Insulation applied over wood roof deck.

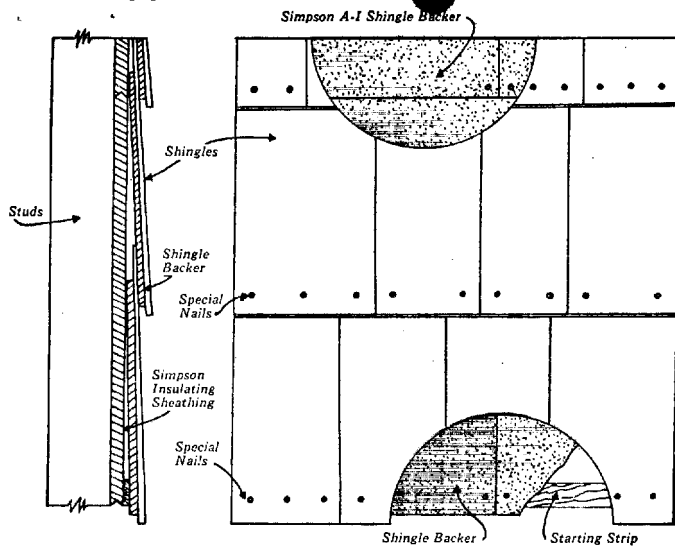


Fig. 3. Detail Showing Application of Shingles or Shakes to Simpson A-I Shingle Backer and Simpson Insulating Sheathing Using Special Nails.^a

^aUse small-headed galvanized annular ring nails manufactured by Independent Nail Co., Bridgewater, Mass., or Fetter Ring Nails manufactured by American Steel & Wire Co., Chicago.

Fetter Ring Nail: 

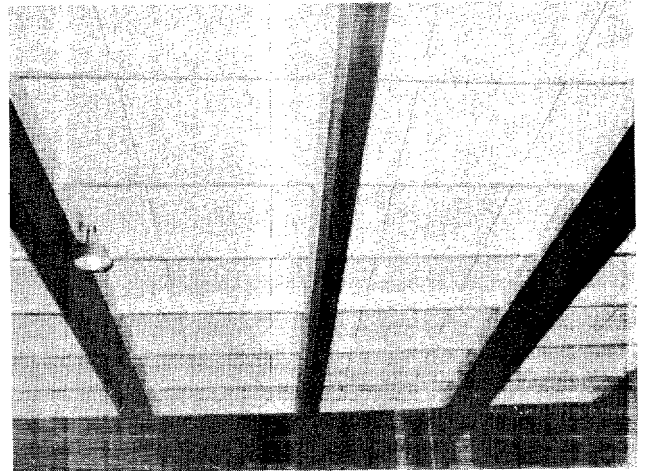
Insulating Decorative Tileboard or Simpson Noisemaster Acoustical Tile.

The Roof Slab may be used on flat, pitched or mono-slope roofs and is covered with conventional types of roofing such as built-up roofing mopped in hot asphalt. On pitched roofs where the roofing is exposed to view, the surface is usually covered with white or colored mineral granules to enhance the appearance. This product is designed for moderate temperatures and is recommended for use as a roof deck only where the average January temperature is 40° Fahrenheit or higher.

Table 3. Types of Simpson Insulating Roof Slab

TYPE	DESCRIPTION	FINISH
I ^a	½" Tapestry White finish insulating board laminated to asphalt-impregnated insulating board.	Tapestry White
II ^a	Natural insulating board throughout.	Light Tan [natural finish]
III ^a	Same as II except with Tapestry White finish.	Tapestry White
IV	Asphalt-impregnated board throughout.	Brown
V ^a	Same as Type I without Tapestry White finish.	Light Tan [natural finish]

^aTypes I, II, III and V are available in the 2" and 3" thicknesses with 484 perforations per square foot for obtaining high sound absorption properties. This product is known as Simpson Acoustical Roof Slab.



Simpson Insulating Roof Slab applied to roof of restaurant in Whittier, Calif.

PHYSICAL PROPERTIES

The physical properties of Simpson Insulating Board products not only comply with but well exceed in all respects the requirements of Federal Specification LLL-F-321b (with Amendment 1), U. S. Commercial Standard CS-42-49 and ASTM Standards dealing with insulating board products.

Thermal Conductivity. The insulating value of a material is measured by its thermal conductivity; the lower the conductivity the better the insulating value. The thermal conductivity of a material is the rate of heat transfer in Btu through one square foot of the material in one hour for a one-degree temperature difference and for a one-inch thickness. The average conductivity of Simpson Insulating Board products is 0.33 per hour per square foot per degree Fahrenheit per inch thickness. There is, however, some slight variation from this value in the case of individual products depending upon the density and other factors.

The conductance of a material is similar to the conductivity except that the rate of heat transfer is for a thickness other than one inch. Conductances of various commercial thicknesses of Simpson Insulating Board Products based on the nominal conductivity (per 1") of 0.33 are as follows:

THICKNESS	CONDUCTANCE
½"	0.66
25/32"	0.42
1"	0.33
1 ½"	0.22
2"	0.165
3"	0.11

Tensile and Transverse Strengths. As stated above, the physical properties of Simpson Insulating Board products not only comply with but far exceed the requirements of the Federal Specification dealing with this type of product as well as other similar standards. This is particularly true of the tensile and transverse strengths. The tensile strengths of the various Simpson Insulating Board products and the corresponding Federal Specification values are given in Table 4. The trans-

verse loads for these various products are given in Table 5. It will be noted that the tensile and transverse strengths exceed the Federal Specification requirements by 50 to 100% or more in most instances.

Water Absorption. Simpson Insulating Board products are integrally treated during manufacture to increase moisture resistance. As a result, the water absorptions of these products are substantially less than half of the Federal Specification water absorption requirements. A special moisture permeability test is used for insulating board sheathings. Simpson A-I Sheathing well exceeds the Federal Specification requirement for this physical property.

Compressive Resistance. Compression tests conducted at the University of Washington indicate that Simpson Insulating Building Board has extremely high compressive resistance. Under a load of 800 pounds per square foot, there was no compressive deformation, whereas with a load of nearly 10,000 pounds per square foot the reduction in thickness was only 10%. After the load was released, the permanent reduction in thickness was only 3%. The results of the compression tests are given in Table 6.

Table 4. Tensile Strength of Simpson Insulating Board Products^a

Note: The results in this table are given in pounds per square inch.

PRODUCT	FEDERAL SPECIFICATION REQUIREMENT [Minimum]	TENSILE STRENGTH [Average]
Simpson Insulating Building Board [$\frac{1}{2}$ "	150	232
Simpson Insulating Decorative Tileboard [$\frac{1}{2}$ "	150	236
Simpson Roof Insulation [plain] [$\frac{1}{2}$ "	100	120
Simpson A-I Roof Insulation [$\frac{1}{2}$ "	100	112
Simpson Insulating Sheathing [$\frac{1}{2}$ "	150	198
Simpson Insulating Sheathing [25/32"]	150	239

^aTests by R. W. Hunt Co., Chicago, report of October 12, 1950

Table 5. Transverse Loads at Rupture^a

PRODUCT	Federal Specification Requirement —Pounds [Minimum]	Transverse Load at Rupture —Pounds	
		Lengthwise	Crosswise
Simpson Insulating Building Board [$\frac{1}{2}$ "	10	27.3	20.7
Simpson Insulating Decorative Tileboard [$\frac{1}{2}$ "	10	15.3	15
Simpson Roof Insulation [plain] [$\frac{1}{2}$ "	7	12.7	12
Simpson A-I Roof Insulation [$\frac{1}{2}$ "	7	10.3	8
Simpson Insulating Sheathing [$\frac{1}{2}$ "	14	15.7	14.3
Simpson Insulating Sheathing [25/32"]	21.9	36.7	33.3

^aTests by R. W. Hunt Co., Chicago, report of October 12, 1950

VAPOR BARRIERS

The use of adequate vapor barriers in exposed walls, ceilings and roofs, in conjunction with Simpson Insulating Board products is recommended in localities where the average January temperature is below 45° F. A vapor barrier is a material having a high degree of resistance

Table 6. Results of Compression Tests^a

Actual Applied Load [lbs./sq. ft.]	Total Compressive Deformation Under Load [inches]	Set After Releasing Load ^b [inches]	Percent in Thickness Reduction at Applied Load ^c	Percent Reduction in Thickness After Releasing Load ^c
A	B	C	D	E
800	0	0	0	0
3,200	0.016	0.006	3.2	1.2
6,400	0.034	0.010	6.8	2
9,600	0.050	0.015	10	3
12,800	0.067	0.020	13.4	4
16,000	0.084	0.027	16.8	5.4
19,200	0.099	0.035	19.8	7
22,400	0.115	0.044	23	8.8
25,600	0.128	0.050	25.6	10
28,800	0.142	0.057	28.4	11.4
32,000	0.151	0.065	30.2	13
40,000	0.178	0.079	35.6	15.8
48,000	0.196	0.093	39.2	18.6

^aTests conducted at the University of Washington and summarized from report of January 19, 1951, the results given being the average of three tests. Size of samples tested, 12"x12"x $\frac{1}{2}$ ". Area of loaded surface, 6"x6". Approximate time of loading, 20 minutes.

^bAfter each increment of loading, the load was reduced to 800 lbs./sq. ft. and residual deformation was measured.

^cPercent reduction in thickness is percentage of original thickness of $\frac{1}{2}$ ".

to the passage of water vapor. There are two types of vapor barriers, namely (1) vapor resistant papers sold as vapor barriers under various trade names and (2) vapor resistant paints or coatings.

The vapor barrier should be installed as near the warm side of the construction as possible, such as on the inside face of studs or the under side of ceiling joists. Either the paper type or paint type may be used. Many oil base paints are good vapor barriers and may be applied to the inside surface of the wall or ceiling as a decorative finish. Usually at least two or three coats of this type of paint are required to provide adequate vapor resistance. Aluminum and asphalt-base paints are also good vapor barriers. Water paints are not vapor barriers.

APPLICATION OF SIMPSON INSULATING BOARD PRODUCTS

Simpson Insulating Board Products are easy to work with on the job. They cut easier, smoother and cleaner—saving time on the job, permitting better joints and a high grade of workmanship.

Application instructions for the various Simpson Insulating Board products are given on the following pages.



Simpson Insulating Board products can readily be cut with a sharp knife, leaving a clean edge.

Application of Simpson Insulating Building Board as Interior Finish

NOTE: Simpson Insulating Building Board is applied with ordinary carpenters' tools. Packages of Board should be opened 24 hours before application and the Boards placed individually around the room to allow adjustment to local atmospheric conditions.

1. Framing should be erected as in ordinary frame construction on not more than 16-inch centers. Headers should be cut in between framing members at the ends of the Insulating Board to provide a nailing base. (See Fig. A.) Where possible, Simpson Insulating Building Board should be of sufficient length to span between sills and plates or other structural members. Headers are also recommended in back of chair rails and all other heavy mouldings.

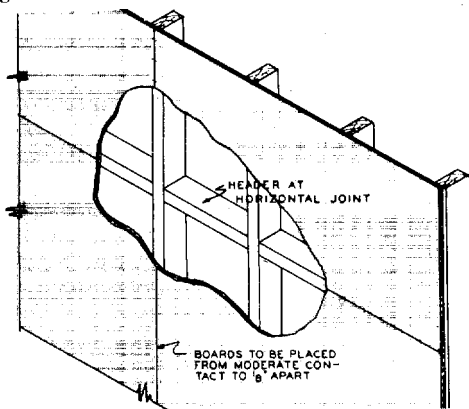


Fig. A. Framing Details for Simpson Insulating Building Board.

2. Nails. Where nails are to be exposed, plated insulating board or fiber board nails are recommended. Where nails are to be covered with panel strips or mouldings, 1½-inch common, box or galvanized nails should be used.

3. Cutting. Where joints are to be covered with battens or mouldings, Board may be cut with a sharp fine-tooth saw, using rapid strokes and a minimum of pressure. Where joints are to be exposed and cutting is required, board should be cut with a sharp linoleum knife against a straight edge or by means of the special tools described in the following paragraph.

4. Beveling and Grooving. Simpson Insulating Building Board can be cut, beveled or grooved by means of special tools available for this purpose. Some of the operations possible with these tools are shown in Fig. B. These tools include the Bevel-Devil manufactured by the Kimball Mfg. Co., Royal Oak, Michigan, which consists of an inexpensive set of three tools, and the Stanley Fiber Board Plane manufactured by the Stanley Co., New Britain, Connecticut.

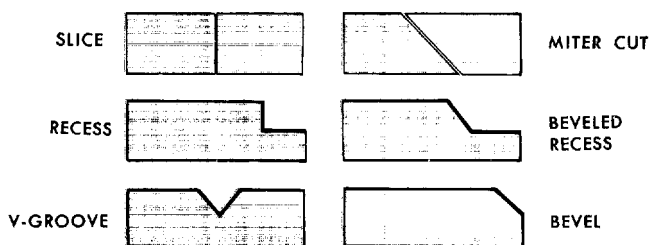


Fig. B. Cuts Obtainable with Special Cutting and Beveling Tools.

5. Relief Carving. Artistic decorative effects may be produced by carving the surface of Simpson Insulating Building Board. A design is first laid out in pencil, and razor blades or a sharp knife are then used to carve the Insulating Board. Where the surface is to be beveled, grooved or carved, this work should be done before the boards are applied.

6. Joint Treatments. Various types of joint treatment, such as beveled edges or covering the joints with mouldings, are illustrated in Fig. C.

7. Continuous or Smooth Joint Treatment. Where a smooth surface is desired for wall coverings or thick plastic paints, it is necessary to reinforce the joints with galvanized wire mesh or screening. Write for special application instructions for this purpose. Tape and cement methods of joint reinforcement are not recommended.

8. Wainscoting. Simpson Insulating Building Board, when used on walls as an interior finish, may be applied from floor to ceiling, with or without a chair rail, or above a wainscoting. If the room or space is to be subjected to severe usage, a hardboard or plywood wainscoting is recommended.

9. Application by Nailing to Framing. If joints are to be exposed, bring adjoining insulation boards into moderate contact, but do not force into place. If joints are to be covered with mouldings or batten strips, leave a 1/16" to 1/8" space between adjoining boards. Nail to intermediate framing members first, spacing nails 6" apart and then along the edges, spacing nails 3" apart and 3/8" from edges.

10. Painting Simpson Insulating Building Board. Simpson Insulating Building Board may be left in the natural factory-applied finish or may be painted, enameled or otherwise decorated.

10a. Casein Paints may be applied directly to the factory-finished Tapestry White surface of Simpson Insulating Building Board. A single coat of a good casein paint will usually give satisfactory coverage when applied over the Tapestry White finish.

10b. Oil or Varnish Paints. The factory-finished surface of the Simpson Insulating Building Board need not be sized if oil or varnish paints are to be applied thereto. The oil paint may be applied directly to this surface with satisfactory results. The natural unpainted surface should be sized before application of oil or varnish paints. The size should be that recommended by the paint manufacturer. The best results are obtained if the surface is sanded lightly after the size coat has dried thoroughly. The paint may be applied to the surface thus prepared, using the desired number of coats.

10c. Stains may be used when they are applied to the natural unpainted surface of the board. Glue stains usually give the best results on Simpson Insulating Building Board.

10d. Stencil Decoration. Stencil designs may be cut in oil paper or metal. They are held in position by hand or by thumb tacks while the paint is applied with a stiff stencil brush.

11. Mouldings. Where joints are to be covered with battens or mouldings, nails for attaching battens or mouldings should be of sufficient length to penetrate at least 1 inch into framing members.

12. Corner Treatments. Inside corners may be finished by means of a simple butt joint or with a quarter round wood moulding in the corner. Outside corners should be finished with mouldings or corner beads.

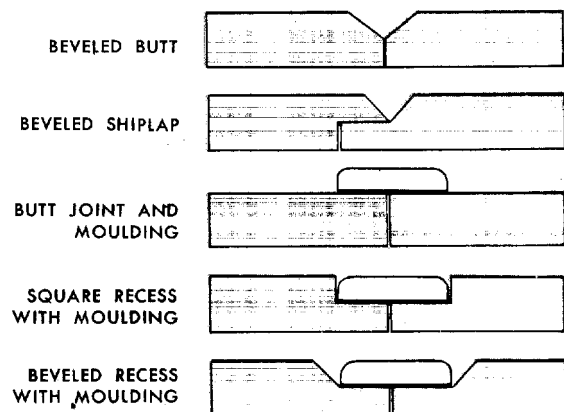


Fig. C. Joint Treatments for Simpson Insulating Building Board.

Simpson INSULATING BOARD PRODUCTS

Application of Simpson Insulating Decorative Tileboard

1. Layout. Where necessary a detailed layout drawn to scale should be provided. In general, ceiling work should be centered and the layout arranged so as to require a minimum of cutting and waste of material. Center lines should be established in the customary manner as required by the layout.

2. Cutting and Fitting. Cutting should be done with a sharp knife or a fine-toothed saw. For fitting around outlets, pipes, etc., a keyhole saw may be used.

3. Nails, Staples and Adhesive. Simpson Insulating Decorative Tileboard may be applied either to a continuous wood nailing base or to wood furring strips using nails or staples, or to smooth plaster or concrete using an adhesive.

4. Nails. Where attachment is to be by nails, 3d blued lath nails ($1\frac{1}{8}$ " long) should be used. Do not drive lath nails through the surface or level of tile.

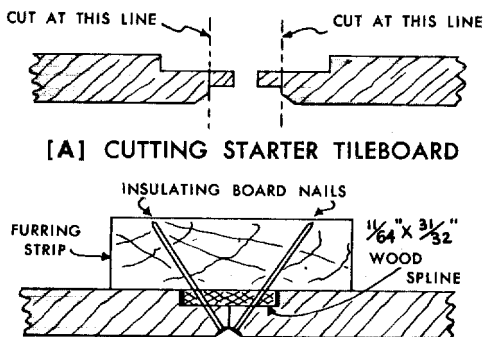
5. Staples. Where application is to be by means of staples, rust-resistant staples $9/16$ " in length should be used. A spring or gun type stapler should be used.

6. Adhesive. Where an adhesive is required, an approved acoustical or insulating board cement should be used and should be certified by the adhesive manufacturer to provide a permanently secure bond with concrete or plaster surfaces.

7. Preparation of Base—

7a. Continuous Wood Nailing Base. Cover framing with a wood sub-base of No. 1 common Douglas Fir, Hemlock, or equivalent, matched $25/32$ -inch lumber to form a continuous, level nailing base. Plywood ($3/8$ " or more thick) may be substituted for the lumber if desired.

7b. Furring Strips. 1x3-inch furring strips (preferably kiln dried) should be applied to framing members and should be true and level. Furring should be spaced to accommodate Tileboard pattern but not over 16 inches on centers.



[B] STARTING TILEBOARD AT CENTER OF ROOM

Fig. D. Details for Preparing Joint for Starting Application of Tileboard in Center of Room.

7c. Preparation of Surfaces for Adhesive Application. Surfaces should be tested to be level and should be solid. Any loose plaster should be removed and the surface replastered. If plaster is generally unsound, the tile should be applied to furring strips.

7d. Concrete Surfaces. Concrete surfaces should be thoroughly dry and should be washed with a solution consisting of 1 pound of zinc sulphate to 1 gallon of water. Surface should be allowed to dry before applying Tileboard.

7e. Plaster Surfaces. On new work, Simpson Insulating Decorative Tileboard may be applied directly to the brown coat, omitting the white or finish coat. If the plaster has been painted, a test sample should be installed to determine whether or not the adhesive will bond satisfactorily to the paint, allowing at least 48 hours for the test. If the paint becomes soft or the Tileboard becomes loose in this time, the paint should be removed and the Tileboard applied directly to plaster.

8. Installation—

8a. Conditioning Tileboard. Condition all Tileboard by opening packages and allowing to stand 24 hours in room for adjustment to atmospheric conditions.

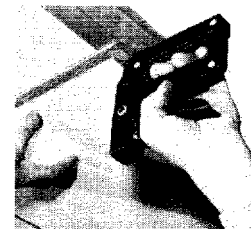
8b. Starting of Work. On small areas work may be started in a corner and application proceed in both directions to the opposite sides. On large areas, work should be started in the center of the room or space, placing the first tile either with edges adjoining center line or with the center of tile on the center line of the ceiling, depending on the requirements of the layout.

8c. Where application is started in the center, so that it is necessary to work from the center in both directions toward the walls, a wood spline or starting strip (size $1\frac{1}{4}$ "x $3\frac{1}{2}$ ") should be attached to ceiling and placed in the center and used as a starter strip as shown in Fig. D. The tongues of the center tile should be cut off and these units started at the spline. Center units should be started by nailing at an angle through bevel using $1\frac{1}{2}$ " insulating board nails which have a small flat head.

8d. Application by Nailing or Stapling. Drive nails or staples through nailing flange and set nail heads even with surface of nailing flange. The number of nails or staples to be used with the different sizes of Tileboard are as follows:

Size of Tileboard	Nails or Staples per Tileboard
12" x 12"	2
12" x 24"	4
16" x 16"	3
16" x 32"	6

Applying Simpson Insulating Decorative Tileboard by Stapling Method

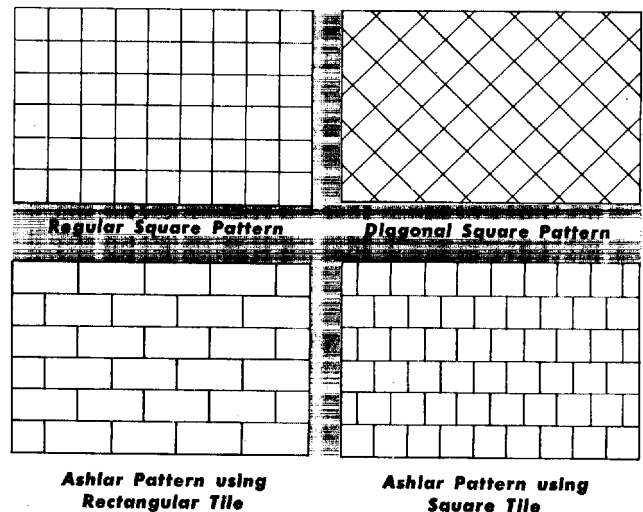


8e. Application with Adhesive. For efficient work, two men are required, one to erect Tileboard and the other to apply adhesive and provide other assistance. Apply spots of adhesive 2 or 3 inches in diameter and about $\frac{1}{2}$ " thick to the back surface near each corner with additional spots 8 to 10 inches apart over the area. Exercise care to prevent adhesive from appearing on the exposed finished side. Slide unit back and forth into position, finishing in final position with exposed surface level and true.

8f. Successive units of tile should be applied in a similar manner after inserting tongue of tile to be applied in groove of tile in place, making sure that joint at bevel is tight.

8g. Protecting Surface. Care should be exercised to avoid soiling or damaging the surface of the tile. Mechanics handling tile should keep hands clean by washing frequently.

8h. Mouldings. Corners and intersections should be finished with suitable mouldings.



Application of Simpson Noisemaster Acoustical Tile

1. Layout. Where necessary a detailed layout drawn to scale should be provided. In general, ceiling work should be centered and the layout arranged so as to require a minimum of cutting and waste of material. Center lines should be established in the customary manner as required by layout.

2. Cutting and Fitting. Cutting should be done with a sharp knife or a fine-toothed saw. For fitting around outlets, pipes, etc., a keyhole saw may be used.

3. Nails, Staples and Adhesive. Simpson Noisemaster Acoustical Tile may be applied either to a continuous wood nailing base or to wood furring strips using nails or staples, or to smooth plaster, concrete or gypsum board using an adhesive.

4. Nails. Where attachment is to be by nails, 17-gauge insulating board or fiberboard nails should be used. Use $1\frac{3}{8}$ " or $1\frac{1}{2}$ " nails for $\frac{1}{2}$ " or $\frac{5}{8}$ " tile. Use $1\frac{3}{4}$ " nails for $\frac{3}{4}$ " or 1" tile. Use collar nails or small-headed nails for the first two starting tile as per paragraph 8c.

5. Staples. Where application is to be by means of staples, rust-resistant staples $9/16$ " in length should be used. A spring or gun-type stapler should be used.

6. Adhesive. Where an adhesive is required, an approved acoustical cement should be used and should be certified by the adhesive manufacturer to provide a permanently secure bond with concrete, plaster or gypsum board surfaces.

7. Preparation of Base—

7a. Continuous Wood Nailing Base. Cover framing with a wood sub-base of No. 1 common Douglas Fir, Hemlock, or equivalent, matched 25/32-inch lumber to form a continuous, level nailing base. Plywood ($\frac{3}{8}$ " or more thick) may be substituted for the lumber if desired.

7b. Furring Strips. 1x3-inch furring strips (preferably kiln dried) should be applied to framing members and should be true and level. Furring should be spaced not over 12 inches on centers.

7c. Preparation of Surfaces for Adhesive Application. Surfaces should be tested to be level and should be solid. Any loose plaster should be removed and the surface replastered. If plaster is generally unsound, the tile should be applied to furring strips.

7d. Concrete Surfaces. Concrete surfaces should be thoroughly dry and should be washed with a solution consisting of 1 pound of zinc sulphate to 1 gallon of water. Surface should be allowed to dry before applying acoustical tile.

7e. Plaster Surfaces. On new work, Simpson Noisemaster Acoustical Tile may be applied directly to the brown coat, omitting the white or finish coat. If the plaster has been painted, a test sample should be installed to determine whether or not the adhesive will bond satisfactorily to the paint, allowing at least 48 hours for the test. If the paint becomes soft or the acoustical tile becomes loose in this time, the paint should be removed and the tile applied directly to plaster.

7f. Gypsum Board Surfaces. Where ceiling is of frame construction and adhesive application is desired, ceiling joists shall be covered with $\frac{3}{8}$ " or $\frac{1}{2}$ " gypsum board securely nailed to joists. Surface shall be true, level and continuous.

8. Installation—

8a. Conditioning Acoustical Tile. Condition all 12"x24" and 24"x24" tile by opening packages and allowing to stand 24 hours in room for adjustment to atmospheric conditions.

8b. Starting of Work. On small areas work may be started at a wall and application proceed to the opposite sides. On large areas, work should be started in the center of the room or space, placing the first tile either with edges adjoining center line or with the center of tile on the center line of the ceiling, depending on the requirements of the layout.

8c. Securing Starting Tile. Secure the starting tile and one next to it with the grooved edges at right angles to the strips. Use four small-headed (or collar) nails per 12"x12" tile, 6 nails per 12"x24" tile and at least 9 nails per 24"x24" tile. These nails shall be of such length as to penetrate the furring at least $\frac{1}{2}$ ". Nails should be driven in the corner holes and additional nails shall be driven in holes on not over 12" centers in the 12"x24" and 24"x24" tile. Set the nail heads, taking care not to mar the face of the tile or damage the edges of the holes.

8d. Application by Nailing or Stapling. The balance of the ceiling can be installed by the Spline-Lok System, using either

nails or staples. Insert wood splines in the grooves on both sides of the tile already in place so that the splines extend from center to center of the tile units as shown in Fig. E. From this point various alternate methods of applying the tile may be used as shown in Fig. F.

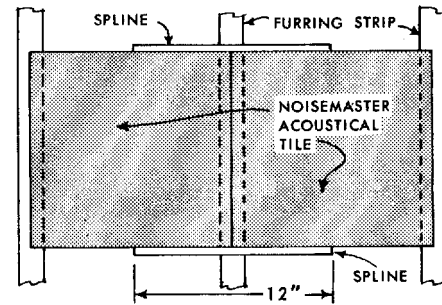


Fig. E. Detail Showing Starting Application of Noisemaster Acoustical Tile.

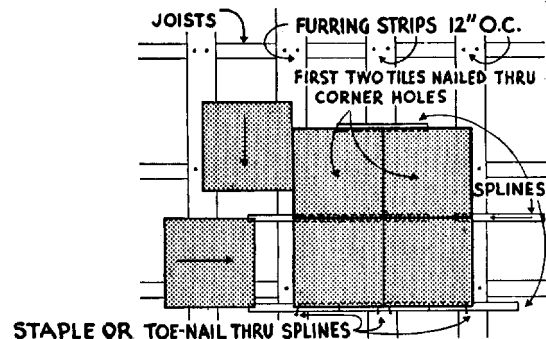


Fig. F. Detail Showing Methods of Applying Noisemaster Acoustical Tile.

8d [1]. Nailing Method. Toe-nail through the splines and the tile into the furring strips as tile are added, setting the nail heads. Exercise care not to mar the surface or bevels of the tile. Use two nails per 12"x12" tile and three or four nails per 12"x24" tile driven at an angle through the splines. Where the 24"x24" tile are used, drive three or four nails through the spline plus additional small-headed (or collar) nails in the holes on not over 12" centers.

8d [2]. Stapling Method. Where Noisemaster is to be applied to a wood surface by means of a stapling gun, it is necessary to raise the base of the stapler to the level of the top of the spline. A wood attachment for this purpose is enclosed in each carton of

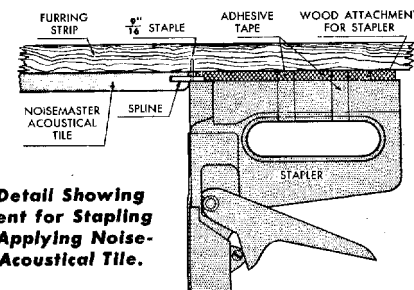


Fig. G. Detail Showing Attachment for Stapling Gun for Applying Noisemaster Acoustical Tile.

Noisemaster. This wood strip may be attached to the base of the stapler by means of Scotch tape or adhesive tape as shown in Fig. G. The shiplapped edge should be placed under the spline to support the spline when the staple goes through the spline. Use at least two $9/16$ " rust-resistant staples per 12"x12" tile and at least four staples per 12"x24" or 24"x24" tile. Where the 24"x24" tile are used, drive small-headed lath or collar nails in

(Continued on page 12)

Simpson INSULATING BOARD PRODUCTS

Application Instructions for Simpson Insulating Sheathing as Wall Sheathing

1. Framing. Studs shall be erected as in ordinary frame construction on 12- or 16-inch centers and (for Type B only) two by four headers inserted between framing members at the ends of the sheathing to serve as a nailing base.

2. Nails. Use 1 $\frac{3}{4}$ - or 2-inch galvanized roofing nails for 25/32" thick sheathing and 1 $\frac{1}{2}$ " galvanized roofing nails for $\frac{1}{2}$ " sheathing.

3. Application of Sheathing—

3a. Application of Type A Sheathing [2x8-ft.]. Apply the 2x8-ft. sheathing at right angles to the framing members, that is, horizontally, leaving a $\frac{1}{8}$ -inch space between the ends. The interlocking long edges shall fit snugly with the V-shaped tongues up. Headers are not required at the horizontal (interlocking) joints. Nail to immediate framing first and then along edges, spacing nails on approximately 4-inch centers and not less than $\frac{3}{8}$ -inch from the edge. Drive nails until the heads are flush with the surface of the insulating board. Bring sheathing into close contact with frame around windows.

3b. Application of Type B Sheathing [4-ft. wide]. Apply the 4-foot units lengthwise (vertically) and directly to all framing members with ample bearing for nailing along all edges. Nail to intermediate framing members first, spacing nails 6 inches apart; and then along the edges, spacing nails 3 inches apart and $\frac{3}{8}$ -inch in from the edges. Drive nails until the heads are flush with the surface of the sheathing. Leave $\frac{1}{8}$ -inch space between adjoining boards.

4. Flashing. Flash windows, doors and other cased openings with strips of metal or roofing.

5. Application of Exterior Finish Over Sheathing [see Fig. 1].

5a. Wood Siding. Wood siding may be applied directly over the Simpson Insulating Sheathing, nailing through to the studs. Siding boards shall butt over studs, nailing through to studs.

5b. Rigid Shingles. Nail 1x2 or 1x3 furring strips horizontally to studs over the Simpson Insulating Sheathing. Furring strips should be spaced to fit shingles and nails should be of sufficient length to penetrate the framing members at least 1 inch.

Note: An alternate method of applying shingles or shakes over Simpson Insulating Sheathing is to use the Simpson A-I Shingle Backer as a base for the shingles. Details of this product are given on Page 6.

5c. Brick or Stone Veneer. For brick or stone veneer, properly space anchors and nail through the Simpson Insulating Sheathing into the studs or plates. **DO NOT NAIL BETWEEN THE STUDS.** Lay brick or stone veneer in the usual manner. Allow not less than $\frac{1}{2}$ -inch space between the Simpson Insulating Sheathing and the brick or stone.

5d. Stucco. If stucco is to be used as exterior finish, apply an approved metal stucco base, nailing through to studs. No stucco shall be applied directly to Simpson Insulating Sheathing. Stucco shall be applied in accordance with stucco manufacturer's specifications.

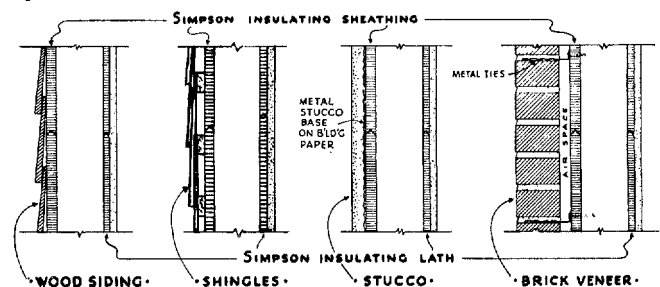


Fig. H. Sections Through Various Types of Frame Walls Showing Application of Various Types of Exterior Finish Over Simpson A-I Insulating Sheathing.

Application Instructions for Simpson Insulating Lath

1. Framing or Furring. The studs, joists or rafters shall be erected as in ordinary frame construction on 12- or 16-inch centers. For exterior masonry walls install 1x2 furring strips vertically on 12- or 16-inch centers and shim to a true level plane.

2. Nails. Blued plasterboard nails with 5/16-inch heads are recommended for applying Simpson Insulating Lath. Use 1 $\frac{1}{4}$ -inch nails for $\frac{1}{2}$ -inch lath.

3. Application of Lath. Lath shall be applied with long edges at right angles to the framing or furring strips. Interlocking long edges shall fit together firmly and smoothly. Center all end joints on framing leaving 1/16" to $\frac{1}{8}$ " space between end joints. Stagger the vertical or end joints of each course of lath with the joints of the preceding course. Nail lath securely to framing, using five nails at each stud or nailing member; that is, twenty nails for each lath when framing is on 16-inch centers. Use strips of Simpson Insulating Lath where piecing out is necessary; do not fill out with wood lath or wood strips. To cover arches,

curves and sweeps, first nail lath at the end, holding it to the required contour and then nail to each successive stud, joist or furring strip.

4. Reinforcing Corners and Angles. All outside corners shall be reinforced with metal corner beads (see Fig. 1). Reinforce all re-entrant angles with standard expanded metal lath strips 6 inches wide bent into the angle and secured in place by nailing. All metal lath reinforcing shall be nailed through Simpson Insulating Lath into framing. Use 6-inch strips of expanded metal lath to reinforce all joints between frame and masonry construction.

5. Plastering on Simpson Insulating Lath—

5a. Type and Consistency of Plaster. Use only standard gypsum cement plaster or gypsum wood fiber plaster containing no lime for scratch and brown coats. Both coats shall be mixed to a wet consistency to allow for application with light trowel pressure and to facilitate darbying. The plaster, especially for the scratch coat, shall have a setting time of not more than 2 or 3 hours. Any standard plaster finish may be used over the brown coat such as gypsum, lime, or lime gauged with gypsum. Lightweight aggregate plasters are not recommended for use with Simpson Insulating Lath.

5b. Application of Plaster. The plaster shall be applied in three coats TO FULL $\frac{1}{2}$ -INCH THICKNESS. Wherever necessary and particularly on ceilings, provide plaster screeds to insure an even, uniform, full $\frac{1}{2}$ -inch plaster thickness. Rod and trowel surface to a true plane. All corners and angles shall be plumb and true and darby strokes shall be in the direction of framing members, with the darby spanning two or more studs or joists.

5c. Ventilation and Heat. Provide adequate ventilation for proper drying of the plaster. Proper ventilation is necessary in winter as well as in summer. Adequate heat shall be provided in winter in freezing weather to prevent injury to fresh plaster by frost.

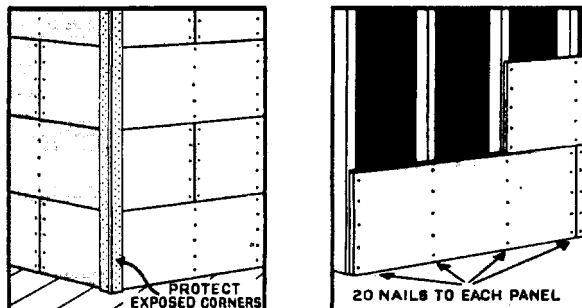


Fig. 1. Application of Simpson Insulating Lath.

Insulating Frame Construction Floors with Simpson Insulating Building Board

1. Intermediate Frame Construction Floors shall be insulated with Simpson Insulating Building Board by applying a layer of the board between the joists and the rough floor (Fig. K). The board should be applied over the joists with edges in moderate contact, nailing sufficiently to hold in place while the sub-floor is being laid. The rough or sub-flooring should be face-nailed into the joists. Nail the finish floor to the sub-floor in the usual manner.

2. Floating Floor Construction. Where a greater degree of sound insulation is desired, the floating floor construction (Fig. L) is recommended. This consists of applying a layer of Simpson Insulating Building Board directly upon the rough flooring, followed by 1x3 sleepers on 16-inch centers to receive the finish

flooring. The sleepers shall be securely nailed through to sub-floor. Write for special folder on this subject entitled Sound Insulation of Floors and Walls.

3. Attic Floors. Apply a layer of Simpson Insulating Building Board directly to attic floor joists, extending to the side walls or eaves to prevent air leakage at this point. If the eaves are not tight, the joist space between the insulating board and the ceiling below should be blocked off at the ends to prevent air leakage into this space. Lay wood floor over the insulating board in portions of the attic to be used for storage or living purposes, nailing through to joists. If the attic is already covered with rough flooring, nail insulating board directly to the existing floor.

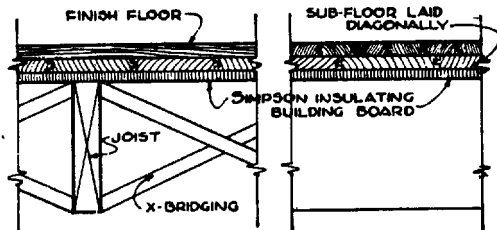


Fig. J. Simpson Insulating Building Board Applied Between Joists and Sub-Floor.

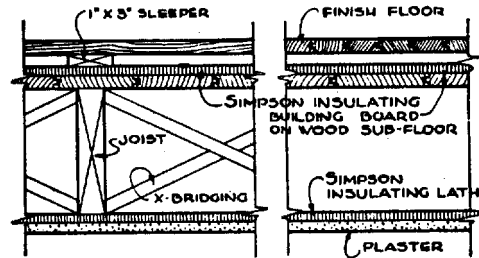


Fig. K. Floating Floor Construction.

Insulating Masonry Construction Floors

NOTE: Any smooth, dry concrete or other masonry floor may be insulated with Simpson Roof Insulation, size 2x4 ft. Simpson Insulating Building Board should be used where the finish floor is to be wood strip flooring [Par. 4b].

1. Waterproofing or Damp-proofing Course. Damp basement floors or floors subjected to hydrostatic pressures, shall be waterproofed by means of a membrane waterproofing course, consisting of saturated roofing felt embedded in hot asphalt or pitch.

2. Adhesive. The Simpson Roof Insulation shall be cemented to the masonry floor or to the waterproofing course by embedding in either hot asphalt or cold asphalt mastic. Asphalt emulsions are not recommended for this purpose. Where hot asphalt is used, concrete shall first be primed with an asphalt cutback. Where cold asphalt plastic cement is used, trowel mastic directly onto masonry floor or to waterproofing course to a thickness of 1/16- to 1/8-inch as required to present a plane surface, and embed insulating board therein.

3. Application of Insulating Board. The Simpson Roof Insulation shall be spaced approximately 1/16-inch apart and shall be rolled or "stepped down" to insure intimate contact with adhesive and proper bond. If a second layer of Roof Insulation is to be applied, this second layer shall be properly cemented to the first layer with a liberal coating of the adhesive used, the joints of the second layer being offset with respect to first layer.

4. Finish Flooring—

4a. Wood Block Flooring [Parquet]. This type of flooring shall be applied in the customary manner as recommended by the flooring manufacturer. The adhesive for applying the flooring should be an asphalt plastic cement or other type of adhesive as

recommended by the flooring manufacturers and should be applied in a liberal thickness. Asphalt emulsion shall not be used.

4b. Wood Flooring [Strip]. A layer of Simpson Insulating Building Board shall be nailed to 2x3 sleepers embedded in the concrete on 48-inch centers. If the sleepers are not laid flush with the surface of the concrete slab, the space between the sleepers, and flush with the surface thereof, should be filled with cinder or gravel concrete before application of the insulating board. Install 1x3 furring strips across the sleepers on 12- or 16-inch centers and nail through the insulating board to the sleepers. The finish floor shall then be applied to the sleepers in the usual manner. Where floor load necessitates rough flooring, apply rough flooring over insulating board in accordance with Paragraph 1 of the specification for Insulating Frame Construction Floors (see Fig. 13).

4c. Masonry Type Finish Floors. Where the finish floor is to be of any masonry type, apply over the insulating board a flood coat of hot asphalt, or 1/16- to 1/8-inch of asphalt mastic or a membrane waterproofing course firmly bonded to the insulating board by means of a continuous mopping of asphalt. Apply granolithic cement or monolithic concrete directly over the surface thus prepared in accordance with flooring manufacturer's specifications. Unit flooring such as ceramic or quarry tile or slate should be applied over the surface thus prepared in a bed of cement in accordance with conventional practice.

APPLICATION OF SIMPSON NOISEMASTER ACOUSTICAL TILE (Continued from page 10)

the holes on not over 12" centers, in addition to the staples.

8e. Application with Adhesive. For efficient work, two men are required, one to erect tile and the other to apply adhesive and provide other assistance.

8e [1]. Sliding Tile in Place. Apply spots of adhesive 1½ to 2½ inches in diameter and about ½" thick to the back surface near each corner, with additional spots 8 to 10 inches apart over the area of the 12"x24" and 24"x24" tile. Exercise care to prevent adhesive from appearing on the exposed finished side. Slide unit back and forth into position, finishing in final position with exposed surface level and true.

8e [2]. Additional Anchorage. It is advisable to use two or

more nails through the corner holes of each of the first few tile to insure against their being pushed out of line when additional tile are slid up to them. If the backing is concrete and this procedure cannot be followed, extra care must be used in placing the first few tile.

8e [3]. Use of Splines with Adhesive. Although the splines may be used to aid in leveling a cemented job, extreme care must be used to avoid breaking the adhesive bond on the tile already placed.

8f. Protecting Surface. Care should be exercised to avoid soiling or damaging the surface of the tile. Mechanics handling tile should keep hands clean by washing frequently.

8g. Mouldings. Corners and intersections should be finished with suitable mouldings.

Application of Simpson Insulating Plank

NOTE: The long edges of the Plank have a beveled tongue and groove joint with nailing flange [Fig. 1]; short edges are square.

1. Cutting and Fitting. Cutting shall be done with a Stanley Fiber Board Plane, a sharp knife or a fine-toothed saw. For fitting around outlets, pipes, etc., a keyhole saw may be used.

2. Nails and Adhesive. Simpson Insulating Plank may be applied either to a continuous wood nailing base or to wood framing or furring strips using nails or staples or to smooth plaster or concrete using an adhesive.

2a. Nails. Where attachment is to be by nails, 3d blued lath nails ($1\frac{1}{8}$ " long) shall be used and shall be driven through nailing flange. Do not drive nails through the surface or bevel of tile. If exposed nailing is unavoidable, as for example, when last plank is installed, use $1\frac{1}{2}$ " insulating board or fiberboard nails.

2b. Staples. Where application is to be by staples, rust-resistant staples 9/16" in length shall be used. A spring or gun type stapler shall be used.

2c. Adhesive. Where an adhesive is required, an approved acoustical or insulating board cement shall be used and shall be certified by the adhesive manufacturer to provide a permanently secure bond with concrete or plaster surfaces.

3. Preparation of Base—

3a. Continuous Wood Nailing Base. Cover framing with a wood sub-base of No. 1 Common Douglas Fir, Hemlock or equivalent, matched 25/32" lumber to form a continuous, level nailing base. Plywood ($\frac{3}{8}$ " or more thick) may be substituted for the lumber if desired.

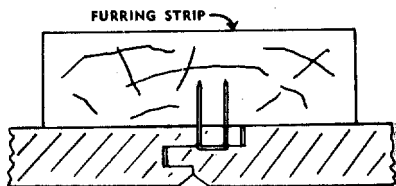


Fig. 1. Section Through Interlocking Joint on Long Edges of Plank.

3b. Framing or Furring. Framing or furring for plank shall be true and level and may be either at right angles to, or parallel with, the plank. If the plank is parallel with framing or furring, long edges shall bear on framing or furring on centers corresponding to the width of plank used. Where plank is applied at right angles to framing or furring, the framing or furring shall be on 9-inch centers up to a height of 5 feet, and 12- or 16-inch centers above this height. Headers shall be inserted between framing members at the ends of plank to serve as a nailing base.

Fig. 2 shows plank applied horizontally across studding which should be installed on centers not exceeding 16 inches. Headers should be inserted between studding on 8- to 12-inch centers (corresponding to width of plank) up to a height of 5 feet, and plank nailed or stapled through nailing flange to these headers. The headers for 16" plank should be on 8" centers up to this height. Fig. 3 shows plank applied vertically to furring strips nailed horizontally to studding. These furring strips shall be on 9-inch centers up to a height of 5 feet.

3c. Preparation of Surfaces for Adhesive Application. Surfaces shall be tested level and shall be solid. Any loose plaster shall be removed and the surface replastered. If plaster is generally unsound, plank shall be applied to furring strips.

3c[1]. Concrete Surfaces shall be thoroughly dry and shall be washed with a solution consisting of 1 pound zinc sulphate to 1 gallon of water. Surface shall be allowed to dry before applying plank.

3c[2]. Plaster Surfaces. On new work, Simpson Insulating Plank may be applied directly to the brown coat, omitting the white or finish coat. If the plaster surface has been painted, a test sample shall be installed to determine whether or not the adhesive will bond satisfactorily to the paint, allowing at least 48 hours for the test. If the paint becomes soft or the plank becomes loose in this time, the paint shall be removed and the plank applied directly to plaster.

4. Installation—

4a. Conditioning Plank. Condition all plank by opening packages and allowing to stand 24 hours in room to permit adjustment to atmospheric conditions.

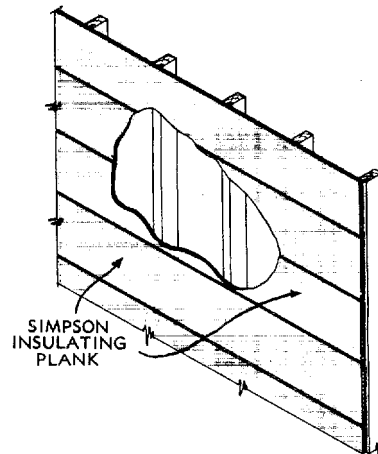


Fig. 2. Simpson Insulating Plank Applied Horizontally across Studding.

5. Application of Plank—

5a. General. Start application of plank at corner or wall intersection. Cut off with a square cut the bevel on one side of the starting plank and butt this edge against wall or corner.

5b. Application by Nailing or Stapling. Nail through face of plank into framing or furring at corner, keeping nail head within $\frac{1}{2}$ -inch of edge of plank. Drive nails or staples through nailing flange using at least one nail at each framing member and spaced not more than 6" apart over any continuous nailing surface. Insert tongue of next adjoining plank to be applied into groove of plank in place, and continue procedure to end of wall, cutting last plank to fit available space.

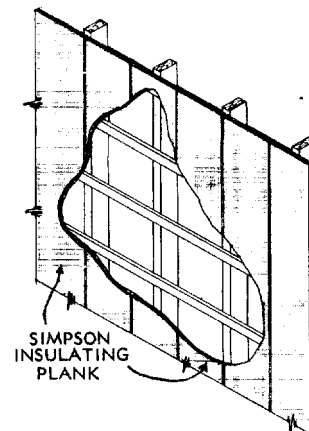


Fig. 3. Simpson Insulating Plank Applied Vertically to furring strips nailed to studding.

5c. Application with Adhesive. Apply spots of adhesive 2 or 3 inches in diameter and about $\frac{1}{2}$ " thick to the back surface near each corner with additional spots 8 to 10 inches apart over the area. Exercise care to prevent adhesive from appearing on the exposed finished side. Slide unit back and forth into position, finishing in final position with exposed surface level and true. Successive units of plank should be applied in a similar manner after inserting tongue of plank to be applied in groove of plank in place, making sure that joint at bevel is tight.

5d. Protecting Surface. Care should be exercised to avoid soiling or damaging the surface of the plank. Mechanics handling plank should keep hands clean by washing frequently.

5e. Mouldings. Corners and intersection should be finished with suitable mouldings.

Instructions For Applying Simpson Roof Insulation Over Flat Roof Decks Under Built-Up Roofing

1. Application, General—

1a. Keeping Insulation Dry. The roof insulation shall be kept dry before, during and after application. Only as much insulation shall be laid over the roof area as can be covered by the finished roofing in the same day. At the end of the day's work, roofing felts shall be turned down over the exposed edges of the insulation and mopped solidly.

1b. Staggered Joints: Adjoining Boards. Roof insulation shall be laid in parallel courses with end joints of each course breaking with those of adjoining courses. Edges of the roof insulation shall be brought to a moderate contact but shall not be forced into place.

1c. Vertical Surfaces: Where the roof meets vertical surfaces, such as parapets, penthouses, etc., the roof insulation shall be cut in a neat, workmanlike manner to insure proper joining without forcing. Cant strips shall be provided at all intersections of roof surfaces and vertical walls, parapets and curbs, and shall be set on top of roof insulation and securely fastened in place by nailing or hot mopping. A 4-inch wide wood nailing strip equal in thickness to the insulation shall be provided when insulation does not end against a vertical strip.

1d. Two Layer Construction. Where roof insulation is laid in two layers, the boards of the second layer shall be laid parallel with those of the first layer, and the joints of the second layer shall break joints with those of the first layer.

1e. Water Cut-Offs. At first full roof insulation board joint back from parapet walls, borders, penthouses, etc., provide a cut-off strip of roofing felt. This cut-off shall consist of 8- to 12-inch strips of saturated roofing felt laid by mopping one-half of the strip to the roof in hot bitumen and then folding the remainder of strip over the insulation and mopping to the top surface. When shiplapped roof insulation is used, the shiplap shall be removed at the cut-off.

1f. Vapor Barriers—

1f (1). Where to Use Vapor Barriers. Vapor barriers shall be used on all heated buildings where the average January temperature is below 45°, and on buildings in which excessive moisture conditions prevail, such as textile mills, laundries, canning factories, creameries, breweries and other processing plants.

1f (2). Types of Vapor Barriers. Vapor barrier shall consist of two plies of No. 15 felt or, on wood decks, the vapor barrier may consist of a base sheet of 45-pound-per-square prepared asphalt roofing coated on both sides.

1f (3). Wrap Vapor Barrier around edge of insulation and mop back 6 inches at walls and other vertical surfaces.

1f (4). Protecting Vapor Barrier from Damage. Care should be exercised to prevent tears, breaks or ruptures of any kind which might interfere with the effectiveness of the vapor barrier.

1g. Bitumen. Coal tar pitch (meeting Federal Specification R-P-381-Type 1) or asphalt (meeting Federal Specification SS-A-666-Type 2, Grade 2) products may be used. In order to secure a strong bond and proper thickness of mopping, the temperature of asphalt shall be 375°-400° F., that of pitch 350°-375° F.

1h. Felts. All roofing felts shall be solidly mopped in place and laid without wrinkles or buckles. They shall be thoroughly broomed down so as to obtain positive adhesion and elimination of air bubbles between each of the surfaces or plies and at edges. Asphalt impregnated felts shall be used with asphalt mopping, tarred felts with coal tar pitch mopping.

2. Application Over Wood Roof Decks—

2a. Roof Deck. The surface of the roof deck shall be free from dirt and loose material and shall be thoroughly dry. All loose or springy boards shall be properly nailed before roof insulation is laid.

2b. Nails. Use large headed galvanized nails (not less than 7/16" head) of sufficient length to pass through the insulation and penetrate the wood roof boards at least 3/4". Nails should not pass through roof decks.

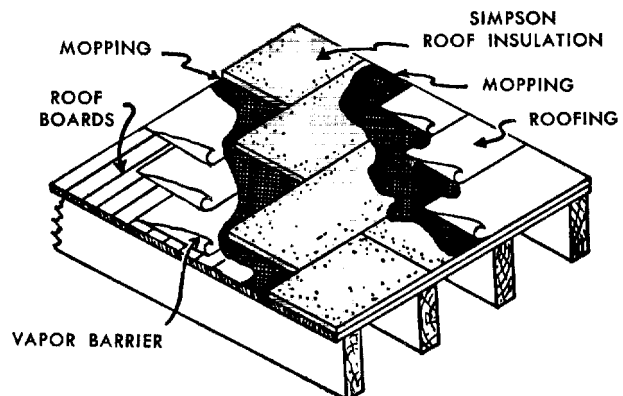
2c. Coal Tar Pitch Application. Where coal tar pitch is used, the wood deck shall be covered with red rosin sheathing paper to prevent bitumen from dripping through. The sheathing paper

need be nailed only as often as necessary to hold it in place and be kept free from wrinkles or buckles until covered by the insulation or vapor barrier.

2d. Vapor Barrier. Vapor barrier shall be used in all cases under the conditions specified in Paragraph 1f. Vapor barrier may consist of either two plies of No. 15 felt or a sheet of 45-pound prepared asphalt roofing applied as specified in Paragraphs 2d (1) and 2d (2), respectively.

2d (1). No. 15 Felt Type Vapor Barrier. Where coal tar pitch is used, the red rosin sheathing paper shall be covered with two plies of No. 15 tarred felt, lapped half with solid mopping between each ply. Laps shall be front-nailed on 18-inch centers with caps and nails. Where asphalt is used, apply a vapor seal consisting of two plies of No. 15 asphalt felt, each sheet laid 19 inches over the preceding one, and each sheet back nailed at intervals not to exceed 18 inches. Mop solidly the 19-inch lap with steep roofing asphalt.

(NOTE: Subsequently, when insulation is applied, wrap vapor barrier around edges of insulation and mop back 6 inches at walls and other vertical surfaces. Turn back top ply of felt and solidly mop to insulation.)



INSULATING WOOD ROOF DECKS

2d (2). 45-Pound Prepared Roofing Vapor Barrier. Lay a base sheet of 45-pound prepared asphalt roofing, coated on both sides, over the red rosin sheathing paper. Edges shall be lapped 4 inches with laps solid cemented with hot asphalt or plastic cement and nailing with galvanized barbed roofing nails spaced not over 2 inches on centers.

2e. Application of Insulation. The roof insulation shall be laid at right angles to the roof boarding. The insulation may be applied to the wood roof deck either by nailing as in Paragraph 2e (1) or where a vapor barrier is required, by mopping as in Paragraph 2e (2). Edges of insulation shall be in moderate contact and shall not be forced in place. Where insulation meets vertical surfaces, cut to allow not over 1/2 inch clearance.

2e (1). Application by Nailing Insulation. Where no vapor barrier is required, each board shall be secured in place by nailing in each corner and two nails in the middle of the roof insulation. Drive nails slightly below surface of roof insulation. If two layers of insulation are used, nailing shall also be through the second or top layer, using nails of sufficient length to penetrate into the wood deck at least 3/4" or the second layer may be solidly mopped to the first layer.

2e (2). Application by Mopping Insulation over Vapor Barrier. Mop the exposed vapor barrier felt liberally with hot bitumen. Only sufficient area to provide complete embedment of each roof insulation board shall be mopped at a time. Embed each board firmly in the solid bituminous mopping. Where two layers of roof insulation are to be applied, solid mop the exposed surface of the first layer liberally with hot bitumen. Only sufficient

Simpson INSULATING BOARD PRODUCTS

area to provide complete embedment of each board shall be mopped at a time. Embed each board of the second layer firmly in the solid mopping of bitumen.

3. Application Over Concrete, Gypsum and Unit Tile—

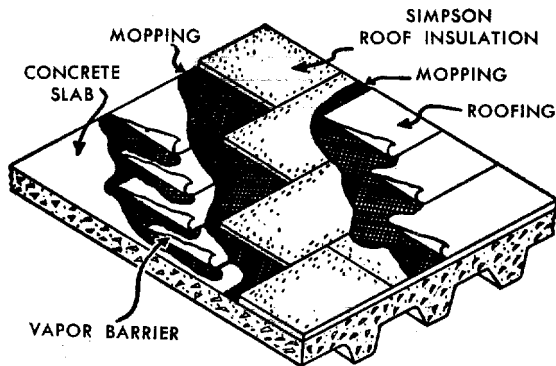
3a. Roof Deck. The surface of the roof deck shall be reasonably smooth without depressions, free from dirt and loose materials, thoroughly dry and pitched to drain. Where deck is of precast cement slabs, gypsum plank, book tile or similar unit or tile construction, the joints shall be properly grouted or pointed up.

3b. Priming the Deck. If coal tar pitch is used, no primer is necessary. If asphalt is used, prime the deck with asphalt primer. Use a liberal coating of primer over gypsum decks.

3c. Vapor Barrier. A vapor barrier shall be used in all cases on poured concrete and poured gypsum decks.

3c (1). Over Poured Concrete. Where the deck is of poured (monolithic) concrete construction the mopping shall be continuous. Over the hot mopping lay 2 plies of No. 15 felt lapped half. Each ply shall be solidly mopped to the deck and also between plies, followed by thorough brooming down of felts to eliminate air pockets and to obtain positive adhesion between each of the surfaces or plies of felts. Apply insulation as specified in Paragraph 3d.

3c (2). Over Poured Gypsum. Where the deck is of poured gypsum construction, channel mop with continuous mopping of hot bitumen approximately 2 feet wide with channel spacings approximately 6 inches wide between moppings. Over the hot mopping lay 2 plies of No. 15 felt lapped half and solidly mopped between plies, followed by a thorough brooming of felts to eliminate air pockets and to obtain positive adhesion between each of the surfaces or plies of felts. Apply insulation as specified in Paragraph 3d.



INSULATING CONCRETE ROOF DECKS

3c (3). Over Precast Cement Slabs, Gypsum Plank, Book or Similar Units apply roof insulation or vapor barrier directly to the deck by spot or strip or channel mopping, keeping the mopping back approximately 4 inches from joints when using pitch. If steep asphalt is used it may be solidly mopped. Where a vapor barrier is used, apply the insulation in accordance with Paragraph 3d.

3d. Application of Insulation. Over the vapor barrier embed each board firmly in a solid mopping of bitumen of the same type as used in the vapor barrier. Only sufficient area to provide complete embedment of each board shall be mopped at a time. Where two layers of roof insulation are to be used, SOLID MOP the exposed surface of the first layer liberally with hot bitumen and embed each board in the SOLID MOPPING of bitumen.

3e. Steep Roof Decks. On steep roof decks having a slope of 3 inches or more per foot, provision shall be made for additionally securing the roof insulation by nailing or other mechanical fastening according to the roofing manufacturer's requirements. Where the roof cannot be used as a nailing base, embed nailing strips in the surface of the deck parallel with the incline of the roof. Also, use steep roofing pitch or steep roofing asphalt.

4. Application Over Steel Roof Decks—

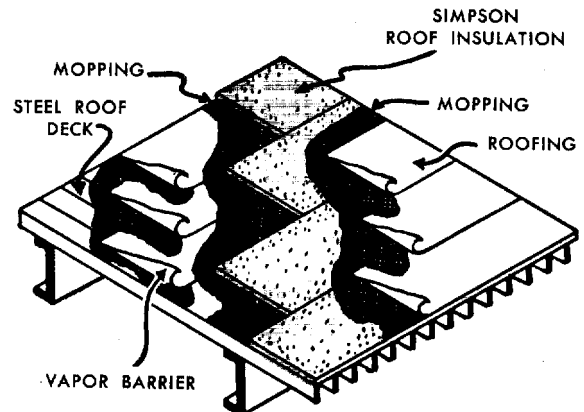
4a. Roof Deck. The roof deck shall be smooth, clean and free from rust and grease and primed (if not shop coated).

Note 1: The following thicknesses of insulation are recommended over fluted metal decks:

Width of Gap	Min. Thickness of Insulation
3/4"	1/2"
2 1/2"	1"
3 1/2"	1 1/2"
4"	2"

Note 2: Pitch shall not be used for bonding felt or insulation to steel decks.

4b. Vapor Barrier. Vapor barrier shall be used in all cases under the conditions specified in Paragraph 1f. Mop the roof with a coat of hot asphalt. Over the mopping, while hot, lay two plies, lapped half No. 15 felt with solid mopping between each ply. Wrap vapor barrier around edge of insulation and mop back 6 inches at walls and other vertical projections.



INSULATING STEEL ROOF DECKS

4c. Application of Insulation. Solidly mop the insulation to the deck or vapor barrier with a liberal coat of hot asphalt. Only sufficient area to provide complete embedment of each board shall be mopped at a time. Embed each board firmly in the hot asphalt. Where two layers of roof insulation are to be used, solid mop the exposed surface of the first layer liberally with hot asphalt. Embed each board of the second layer firmly in the mopping.

4d. Steep Roof Decks. Where insulation board is applied over steel roof decks having a slope of 1 inch or more per foot, each board shall be secured to the steel deck along the top with mechanical fasteners or other devices supplied by the deck manufacturer and which do not penetrate the deck. (Note: Where high inside humidities are likely to prevail, this construction should not be used on account of the possibility of moisture condensation at the mechanical fasteners).

SIMPSON LOGGING COMPANY

WHITE BUILDING • SEATTLE 1

Manufacturers of

PLYWOOD, DOORS, LUMBER, INSULATING BOARD and ACOUSTICAL PRODUCTS

ALTERNATING CURRENT MOTOR TEST DATA

BUILDING _____ JOB NO. _____ ITEM NO. _____
 APPLICATION *TYPE "F" Flush Klean Sewage Ejector*

BALDOR MOTOR

MECH. _____ WIND. *DR-6970* NEMA *224*
 FRAME *2311 M* H.P. *3/4*
 VOLTS *220/440* AMP. *2.8/1.4*
 PHASE *3* CYC. *60*
 R.P.M. *850* °C. *55°*
 SERIAL NO. _____

BALDOR ELECTRIC CO.

ST. LOUIS, MO., U. S. A.

TYPE OF BEARING *Ball* LUBRICATION *Grease* ENCLOSURE *Totally Enclosed*
"STREAMCOOLED"

RESISTANCE—STATOR WINDING (BETWEEN LINES) (25°C) *6.79* Ω OHMS

TORQUE—BREAKDOWN *10.5* LB. FT.
 STARTING *6.7* LB. FT.
 FULL LOAD *4.5* LB. FT.

EFFICIENCY—FULL LOAD *76* PERCENT
74 PERCENT
66 PERCENT

POWER FACTOR—FULL LOAD *72* PERCENT
62 PERCENT
51 PERCENT

SLIP *5.5* PERCENT

AMPERES—FULL LOAD *2.7* AMPS.
 RUNNING LIGHT *1.95* AMPS. (220 V)
 STARTING CURRENT (LOCKED ROTOR) *12.0* AMPS.

TEMPERATURE TESTS—HOURS RUN *5.5* HRS.
 LINE VOLTS *220* VOLTS
 LINE AMPERES *2.7* AMPS.
 SPEED *855* R.P.M.

TEMP. RISE—BY THERMOMETER—STATOR WINDINGS *42* °C
 STATOR CORE *44* °C
 ROTOR WINDINGS *Not wound* °C
 ROTOR CORE _____ °C
 COOLING AIR *24* °C

DIELECTRIC TESTS—STATOR INS. *1800* VOLTS FOR *5* SEC.
 ROTOR INS. _____ VOLTS FOR _____ SEC.

CLASS OF INSULATION *NEMA Class "A" (cotton)*

THESE DATA FROM TEST OF MOTOR SERIAL NO. _____

✓ THESE DATA OBTAINED FROM TEST OF DUPLICATE MOTOR. ABOVE MOTOR IS GUARANTEED TO EQUAL THESE DATA SUBJECT TO USUAL MANUFACTURING VARIATIONS.

DATA REQUESTED BY _____

BY *M. T. Bayha* ENG. DEPT. DATE _____

BALDOR ELECTRIC COMPANY

ST. LOUIS 10, MO.

TILE-TEX

PIONEER DIVISION - THE FLINTKOTE COMPANY
ASPHALT TILE MANUFACTURERS

Approved For Release 1999/08/27 : CIA-RDP78-04133A000100060011-3



Resilient Floor & Wall Coverings

Cable Address: PIONEER, LOS ANGELES
P. O. BOX 2218 TERMINAL ANNEX
LOS ANGELES 54, CALIFORNIA
55th AND ALAMEDA STREETS

June 29, 1954

Malott and Peterson-Grundy
2412 Harrison Street
San Francisco, California

Gentlemen:



FOIAb3b

This is to advise that Tile-TEX Asphalt Tile used on the above subject job is manufactured to Federal Specifications SS-T-306b.

Yours very truly,

Tile-TEX - Pioneer Division
THE FLINTKOTE COMPANY

J. G. Flanagan
Ass't. Pacific Coast Sales Mgr.

JGF/bcs
In Quintuplicate

Subscribed and sworn to before me this
30th day of June, 1954

Notary Public
in and for the County of Los Angeles
State of California

My Commission Expires April 4th, 1957

Approved For Release 1999/08/27 : CIA-RDP78-04133A000100060011-3

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Approved For Release 1999/08/27 : CIA-RDP78-04133A000100060011-3

MASTER GRADE CERTIFICATE

In accordance with Simplified Practice Recommendation No. ~~XXXX~~ R-61-44
of the United States Department of Commerce

This is to Certify

that the tiles contained in the packages included in the shipment enumerated and described below have been carefully inspected and are of STANDARD GRADE MATERIAL.

Customer's Order No. 2895

Date of Shipment January 7, 1954

Consisting of _____ Bbls. _____ Boxes ⁶⁸ Cartons _____ Packages _____

Shipped for

FOIAb3b

Shipped to-

PACKAGE NUMBER	PRIVATE MARKS	CONTENTS
Men's & Women's Toilet Rooms	Shipping Tickets 39283 39284	$4\frac{1}{4}$ Wall Tile & Trim, Colors AH-169, BH-168 Olean Floor Tile 2 $3/16$ " block random, Ruddy Range CB645 1 $9/16$ " block random, Gray Granite with $3/4$ " sqs. Pastel Green & Gray Granite S-7743-2 2 $3/16$ " block random, Ruddy Range 6% non-slip

This certificate is issued at time of shipment. After tiles have left the factory, a master certificate can be issued only on condition that the colored grade seals on the barrels and boxes have not been tampered with.

Date March 4, 1954

Per L. J. Burnell

TILING CONTRACTOR'S CERTIFICATE

This is to Certify that the tiles designated on the face of this certificate have been used for the tile work
in _____

(Date)

(Tiling Contractor's Signature)

MINIMUM GRADE SPECIFICATIONS**FOR FLAT BRIGHT WHITE GLAZED TILES****Standard Grade**

The tiles of this grade are reasonably straight and true in shape and without objectionable surface blemishes. They are free from warpage exceeding 4/10 of 1% (24/1000 of an inch for a six-inch length), wedging or crooked edge exceeding 5/10 of 1%, and free from spots, blots, biscuit cracks, biscuit chips, shivered edges, welts, dry spots, scum, or stickers. The grade permits of certain minor surface blemishes such as occasional specks, sand, and pulls.

Seconds

The tiles of this grade permit of all of the blemishes and defects which are not permissible in the higher grade but are free from blots and biscuit cracks.

**FOR FLAT COLORED GLAZED TILES
(EXCEPT FAIENCE)****Standard Grade**

The tiles of this grade are as perfect as it is possible to manufacture. They are harmonious in color, although they may vary in shade. They are free from warpage exceeding 4/10 of 1% (=24/1000 of an inch in a six-inch length or 17/1000 of an inch in a 4 1/4 inch length.) They are free from wedging and crooked edge exceeding 5/10 of 1%. They are free from biscuit cracks and shivered edges, but glazed-over biscuit chips of 1/32 of an inch or less are permitted. They are free from spots, specks, blots, pulls, dry spots, scum, sand or stickers visible at a distance of more than three feet. Welts are not permitted in this grade.

Seconds

The tiles of this grade permit of all the blemishes and defects which are not permissible in the higher grade, but are free from blots and biscuit cracks.

Grade Tolerance: A tolerance of 5% of Seconds in the Standard Grade is permissible.

FOR UNGLAZED CERAMIC MOSAIC**Standard Grade**

The tiles of this grade are as perfect as it is possible to manufacture. The colors and shades shall be reasonably uniform. The face of the tiles shall be a smooth even surface (excepting "texture" tiles having a more rugged face), uniform in texture, without chips noticeable (when installed) at more than three feet, free from sand holes or blisters. Slight warpage is permissible. Blemishes on the backs of the tiles are permitted if they do not affect the appearance or permanence of the installed surface. The tiles shall be mounted on paper with a reasonably uniform joint. All vitreous tiles shall be non-absorbent and resist percolation of stains; semi-vitreous tiles may vary in degree of stain resistance.

Seconds

Tiles of this grade permit of any of the blemishes not found in the Standard Grade; mixed shades, absorption, warpage, chipping, sand holes, pimples, scarred face, chips, cracks and/or other imperfections.

Grade Tolerance: A tolerance of 5% of Seconds in the Standard Grade is permissible.

EXPLANATION OF TERMS USED IN GRADE SPECIFICATION**For Flat Glazed Tiles**

WARPAGE—A surface curvature, either convex or concave, measured on the face of the tiles along the edges. The degree of warpage is the variation from the plane expressed in percentage of the tile length.
CROOKED SIDES—A curvature of the sides, either convex or concave, measured along the sides. The degree of crooking is the departure from the straight line drawn between two corners, expressed in percentage of the tile length.
WEDGING—A difference in the lengths of two opposite sides, expressed in percentage of the tile length.
SPECKS—Any dark dot on the face less than 1/64" in diameter and noticeable at a distance of more than 3 feet.
SPOTS—Any dark dot on the face more than 1/64" in diameter.
BLOTS—Green marks or stains on the face.
PULLS—Small depressions or scratches in the body noticeable through the glaze at a distance of more than 3 feet.
BISCUIT CRACKS—Any fracture in the body of the tile visible both on face and back.
BISCUIT CHIPS—A glazed-over chip on the edge or corner of the body.
SHIVERED EDGE—A minute fracture of the glaze running along the edge which appears as a fine silvery thread when struck by light from an angle.
WELTS—An unusually heavy accumulation of glaze in the form of a ridge along the edge.
DRY SPOTS—Small areas on the face which have been insufficiently glazed.
SCUM—Lack of gloss, crystalline or frosted in effect, appearing on the face of the tile.
SAND—Grains of sand imbedded in the glaze.
STICKERS—Small rough or raised spots in the glaze.

For Unglazed Ceramic Mosaic

COLORS—Colors shall be harmonious though they may vary in shade. In white the shade shall be as nearly uniform as it is possible to manufacture.
SHADE—The gradation of color.
MIXED SHADES—A decided variation in color values.
CHIPS—The scaling or breaking off at the edges of fragments from the surface of a tile as might result from rough handling.
SAND HOLES—Tiny pits in the surface of the tiles.
PIMPLES—Small surface bubbles or blowouts resulting from the expulsion of gas during firing.
BLISTERS—A bloated effect in which an appreciable area of the surface of a tile has been raised by gas expulsion.
WARPAGE—A concave or convex curvature of a tile so that the surface is not perfectly flat.
NON-ABSORBENT—Impervious—permitting no percolation of stains.
VITREOUS—Glassy—impervious—non-absorbent.
SCARRED FACES—A surface blemish caused by scraping or other marring of the tile.
CRACKS—Hair line fissures.

GRADE DESIGNATIONS—Across the barrels, boxes, or cartons, is affixed a colored package seal imprinted with the grade name. The colors of the seals are as follows: